

# इंटरनेट

# मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 4536-1 (1987): Composite Bottom Stainless Steel Cooking Utensils, Part 1: Copper Electrodeposited [MTD 31: Utensils, Cutlery and Domestic Hardwares]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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Indian Standard

SPECIFICATION FOR  
COMPOSITE BOTTOM STAINLESS STEEL  
COOKING UTENSILS

PART 1 COPPER ELECTRODEPOSITED

( First Revision )

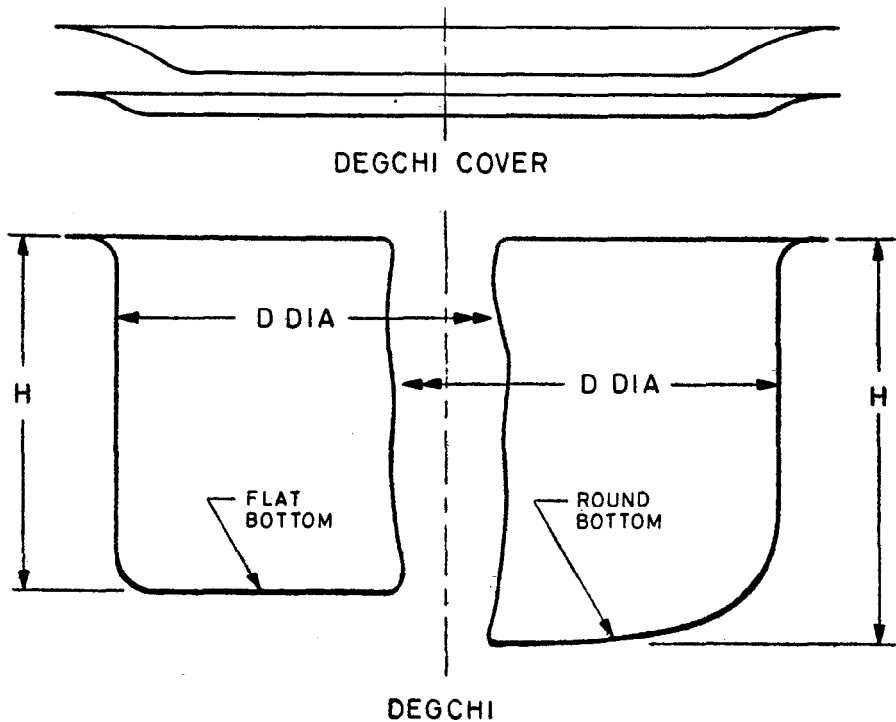
- 1. Scope** — This standard covers requirements of copper-electrodeposited composite bottom stainless steel cooking utensils, namely, *DEGCHIES* ( deep, flat and round bottom ), frying-pans and saucepans.
- 2. Grades** — The composite bottom stainless steel cooking utensils shall be of two grades, namely, 'Heavy' and 'Light'. The 'Heavy' grade utensils shall be made of thicker sheet than those of 'Light' grade. The thickness of the sheet for the two grades shall be as shown in the tables in Fig. 1 to 4.
- 3. Materials** — The materials used for the manufacture of utensils shall be stainless steel conforming to Designation X04Cr18Ni11 or X07Cr18Ni9 of IS : 5522-1978 'Specification for stainless steel sheets and coils ( first revision )'.
- 3.1** The material used for deposition on the bottom of the utensil shall be electrolytic copper conforming to IS : 191-1967 'Specification for copper ( second revision )'.
- 3.2** Rivets and lugs, if used, on the body of the utensil shall be made of the same material as the utensils.
- 3.3** The screw used to secure handle with the lug shall be made either of corrosion resisting material or non-ferrous material suitably plated.
- 3.4** The handle shall be made of impact resistant and non-inflammable plastics.
- 4. Dimensions** — The dimensions shall conform to Fig. 1 to 4. The utensils may have other shapes and dimensions as desired by the purchaser. Such dimensions shall be subject to following tolerances:

Dimensions		Tolerance on Height
Over	Up to and Including	mm
mm	mm	
—	50	± 1
50	100	± 2
100	200	± 3
200	—	± 5

- Note** — The minimum finished thickness of sheet for such utensils shall be the same as given for the utensils covered in this standard.
- 4.1** The thickness of copper layer deposited on the bottom for both grades of utensils shall be 0.50 mm, *Min*.
- 4.2** The thickness of sheet for lids or covers shall be 0.45 mm, *Min* for heavy grade and 0.37 mm, *Min* for light grade,
- 5. Finish** — The utensils shall have no sharp or open edges and shall be finished bright all over. The construction shall be such that it is possible to clean the utensils thoroughly and all surfaces for cleaning are accessible by hand or brush. The utensils shall be free from distortion, dents, wrinkles, scratches, pittings, deep tool marks and other surface defects. The handle of

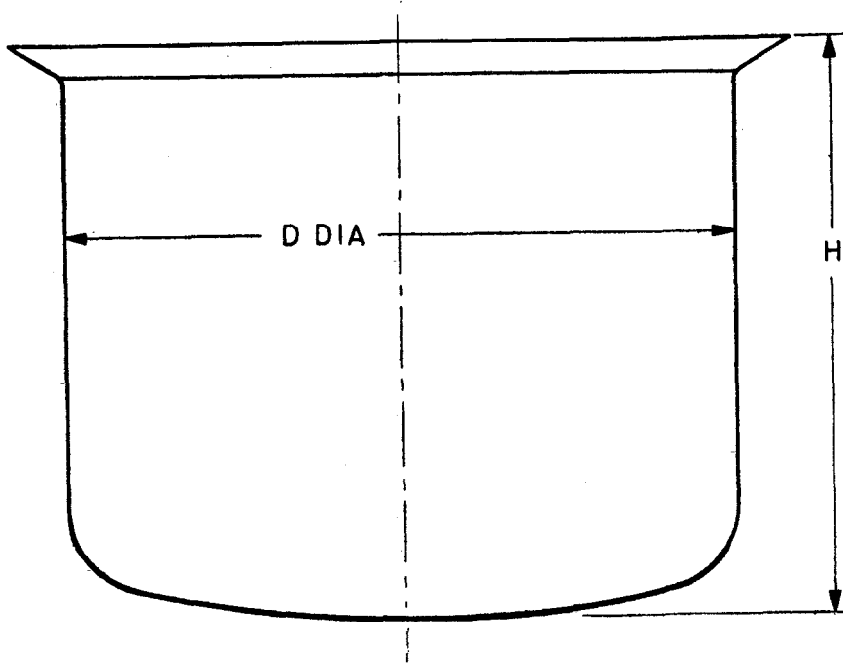
IS : 4536 ( Part 1 ) - 1987

utensils shall be spot-welded and the joints shall not have any crevices. When required by the purchaser, the handles of frying-pans and saucepans shall be made of heat-resisting plastics suitably fitted. Copper shall be deposited electrolytically on the bottom of the utensils. Copper coating shall have matt finish. The coating shall be free from defects, such as pits, stains, blisters, unplated areas and other superficial blemishes visible to the naked eye.



Nominal Dia D	Height H		Minimum Finished Thickness of Sheet	
	Flat Bottom	Round Bottom	Heavy	Light
300	160	175	0.80	0.50
275	150	165		
250	140	155		
235	135	145		
220	120	130		
210	115	125		
200	110	120		
185	95	105		
170	90	100		
150	85	95		
140	75	85	0.80	0.50
125	65	70		
115	55	60		
95	50	55		

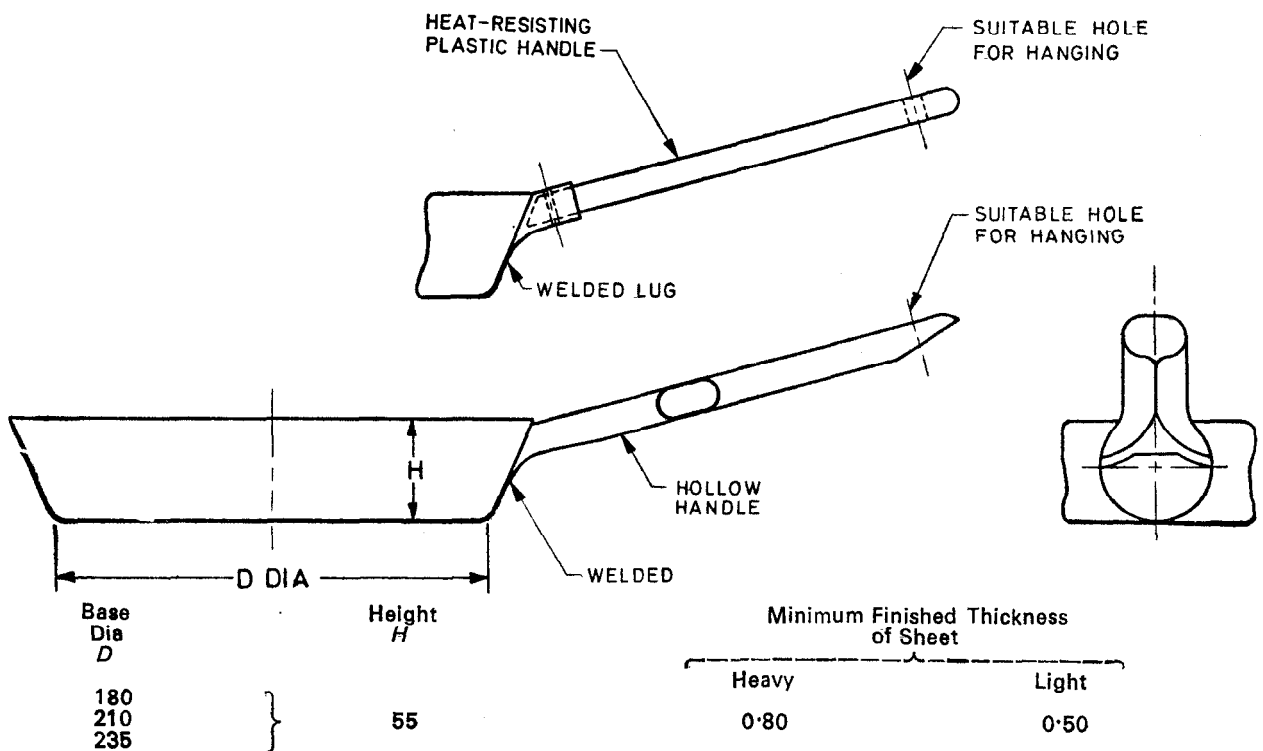
All dimensions in millimetres.  
FIG. 1 DEGCHI AND COVER



Nominal Dia <i>D</i>	Height <i>H</i>	Minimum Finished Thickness of Sheet	
		Heavy	Light
170	150	0.80	0.50
160	140		
150	130		
135	115		
120	100		
110	90		
100	80		
90	70		

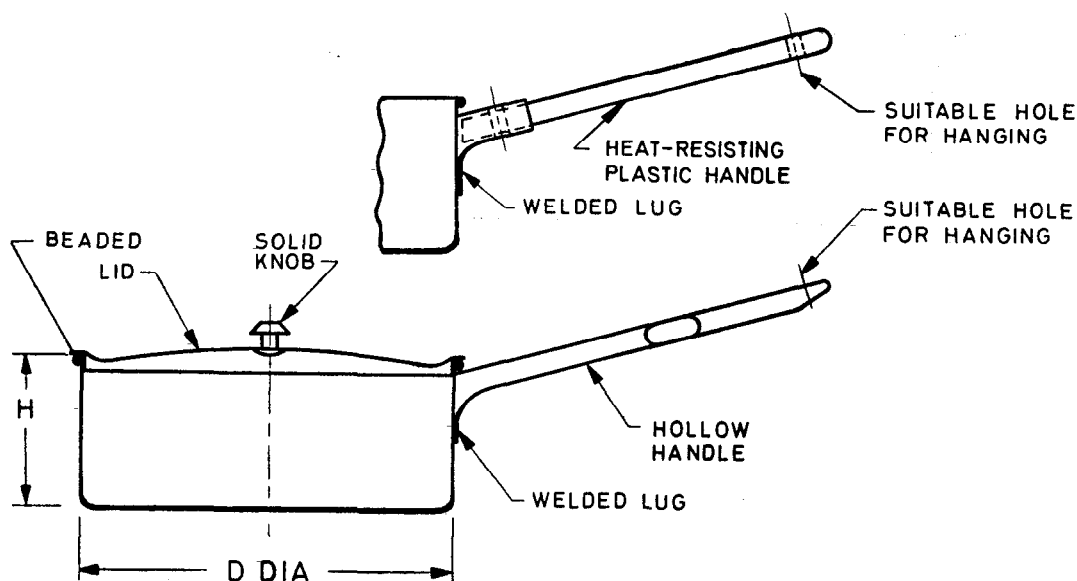
All dimensions in millimetres.

FIG. 2 DEEP DEGCHI



All dimensions in millimetres.

FIG. 3 FRYING-PAN



Inside Dia <i>D</i>	Height <i>H</i>	Minimum Finished Thickness of Sheet	
		Heavy	Light
155	80	0.80	0.50
180	100		
210	120		

All dimensions in millimetres.

FIG. 4 SAUCEPAN

## 6. Tests

**6.1 Coating Thickness Test** — The total thickness of the utensil including copper deposit shall be measured. The copper deposit shall then be stripped off in two areas of required size. The thickness of the stainless steel sheet shall then be measured. The difference between the total thickness including copper deposited and the thickness of stainless steel sheet be considered as the thickness of the copper deposited.

**6.2 Adhesion Test** The utensil shall be subject to the tests as specified in Appendix A.

**6.3 Staining Test** — The utensils when dipped for 16 hours in each of the following solutions, shall not show any sign of staining after removal from the following solutions:

- 10 g of glacial acetic acid ( 99 percent ) dissolved in distilled water to make 100 ml; and
- 5 g of pure sodium chloride dissolved in distilled water to make 100 ml.

**7. Marking** — Each utensil shall be indelibly marked with the manufacturer's name, registered trade-mark or identification mark. The utensils shall also be marked indicating the thickness of stainless steel used, in millimetres or the grade ( see 2 ). The impression of the marking shall not show up on the inside.

**7.1 Standard Marking** — Details available with the Bureau of Indian Standards.

**8. Packing** — Utensils shall be wrapped in soft tissue paper and packed in accordance with the best trade practice or according to the instructions of the purchaser. Care shall be taken to see that the utensils do not get dented during transit.

**APPENDIX A**

*( Clause 7.2 )*

**ADHESION TEST**

**A-1. Mechanical Shock**

**A-1.1** The utensil in question shall be supported in air with deposited surface up side and a steel ball weighing half a kilogram dropped on to it from a height of 250 mm, five times. After completion of the test, the surface shall show no signs of peeling off or coming off.

**A-2. Thermal Shock**

**A-2.1** The utensil shall be kept in an oven to attain a temperature of  $275 \pm 25^{\circ}\text{C}$ . Thereafter, the utensil shall be removed and dipped immediately in water maintained at room temperature ( ambient temperature ). This process shall be repeated three times and at the end of the process, the deposit shall not show any signs of peeling off or coming off.

**EXPLANATORY NOTE**

The composite bottom stainless steel cooking utensils have a combinations of two or more, better heat-conducting metals than stainless steel for increasing the thermal conductivity uniformly all over the area.

This standard was first published in 1968. Keeping in view the improvement in manufacturing technology and materials, and the amendments issued, the clauses for materials and minimum finished thickness of sheet for light grade have been changed accordingly in this revision. The coating thickness test and adhesion test have also been modified. A clause on staining test has also been added.